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REMARKS

This amendment responds to the Office Action mailed April 10, 2002. Accordingly, Applicants respectfully submit that this response is being timely filed.

Claims 1-20 were previously pending. Claims 1-2 and 5-8 were canceled without prejudice or disclaimer by this amendment. Accordingly, Claims 3-4 and 9-20 are now pending in the present application and, for the reasons set forth below, are believed to be in condition for allowance.

SPECIFICATION:

The title has been amended to "Improved Pressure Vessel." Per the Office Action, Applicants have amended the abstract to 149 words, which is below the 150-word limit imposed by the MPEP. Reconsideration is respectfully requested.

CLAIM REJECTIONS – 35 U.S.C. § 102(b)

The Office Action rejects Claims 1-2 and 4-5 as being anticipated by Adl under 35 U.S.C. § 102(b). Claims 1-2 and 5 have been cancelled without prejudice or disclaimer. With regards to Claim 4, however, Adl does not disclose a plug or plug region that is "necked down" to match the cross section of the internal cavity per Claim 4. Applicants respectfully traverse.

Adl discloses a plug 34 that is inserted into a socket 27 and retainer sleeve 30. Adl, Col. 3. The plug 34 abuts the pig tail adapter 28 and not an internal cavity. Adl, Fig. 1. Moreover, the plug 34 does not "neck down" to meet the cross section of an internal cavity. Instead, the plug's outer circumference remains constant along its length. *Id.* Conversely, the present invention discloses a plug 24 that "necks down" to the cross section of the internal cavity 20. See Figure 7. This provides the advantage that the plug

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24 is driven into compression as the external hydrostatic pressure on the vessel increases. Application, p. 4, ll. 27-29. The plug 34 of Adl is driven directly against the pig tail adapter 28 instead of the pressure vessel, i.e. the retainer sleeve 30.

The Federal Circuit explained, "an invention is anticipated if the same device, including all the claim limitations, is shown in a single prior art reference. Every element of the claimed invention must be literally present, arranged as in the claim. The identical invention must be shown in as complete detail as is contained in the patent claim." *Richardson v. Suzuki Motor Co., Ltd.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989). The Adl reference does not disclose, *inter alia*, a plug or plug region that is "necked down" to match the cross section of the internal cavity per Claim 4. Accordingly, reconsideration is respectfully requested.

CLAIM REJECTIONS - 35 U.S.C. § 103(a):

The Office Action rejects Claims 3 and 6-20 as being unpatentable over Adl in view of Beyer et al ("Beyer") under 35 U.S.C. § 103(a). However, the Beyer reference is directed to a window assembly and, therefore, teaches directly away from its use with the Adl reference. The Beyer reference specifically states that ceramic sealants are not desirable for use with its disclosed structure. Beyer, Col. 3, ll. 1-9. Moreover, the Beyer reference refers to a vessel for containing high pressures within rather than resisting high pressures from without. Applicants respectfully traverse.

The Beyer reference is for a window assembly for containing high pressures such as in a large caliber artillery cannon. Beyer, Col. 1, ll. 10-22. The window is constructed so as to allow transmission of light into and from the pressure chamber. Beyer, Col. 3, ll. 11-13. Thus, Beyer teaches away from the use of a plug to seal a pressure vessel as in Adl.

Moreover, the window assembly in Beyer has no disclosure or suggestion of allowing a component lead to pass through the window to the outside.

Furthermore, with specific regard to Claims 9-16 and 18-20, the Beyer reference teaches away from the use of ceramic adhesives. Beyer specifically states:

Finally, while affixing the window to the seat with an adhesive may be possible, ceramic sealants were found to be too inflexible to withstand the repeated temperature and pressure cycles encountered in a gun environment. Softer, i.e., polymeric, sealants erode from the bond area between the window and seat as a result of the high temperature, high-pressure environment, thus leaving the window partially unsupported. The unsupported portion of the window fails on subsequent cycles. Beyer, Col.

3, ll. 1-9 (emphasis added.)

Thus, Beyer expressly warns those skilled in the art from using ceramic adhesive in conjunction with the structure disclosed in Beyer (or Adl) in a pressurized environment. Therefore, Beyer teaches away from using ceramic adhesives in conjunction with Adl.

With specific regard to Claims 10, 16 and 20, neither Beyer nor Adl discloses or suggests the use of a cap. In particular, the present application discloses a cap to, *inter alia*, encapsulate exposed cladding and extend beyond the external surface of the adhesive plug. The Office Action does not refer to the disclosure of a cap in its discussions.

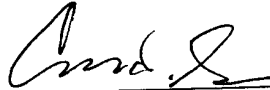
Applicants note that in order to establish a *prima facie* case of obviousness, all of the claim limitations must be taught or suggested by the prior art. See M.P.E.P. § 2143.03; *In re Royka*, 180 USPQ 580 (CCPA 1974). The cited references do not disclose, *inter alia*, the use of ceramic adhesives or a cap. These elements are not disclosed or suggested by the

combination of cited prior art. Thus, the cited prior art references fail to teach or suggest all the claim limitations in Claims 3 and 6-20. A *prima facie* case of obviousness cannot be sustained against the pending claims in view of the cited prior art. See *MPEP* §§ 2142-43. Accordingly, reconsideration is respectfully requested.

CONCLUSION

In each case, the pending rejection should be reconsidered in view of the amendments and remarks herein. Applicants believe that this case is in good condition for allowance, and a Notice of Allowance is earnestly solicited. If a telephone or further personal conference would be helpful, the Examiner is invited to call the undersigned, who will cooperate in any appropriate manner to advance prosecution.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The Title has been amended as follows:

**[A] AN IMPROVED PRESSURE VESSEL [CAPABLE OF WITHSTANDING
ELEVATED HYDROSTATIC PRESSURES, AND ELEVATED
TEMPERATURE]**

The Abstract has been amended as follows:

ABSTRACT

[A] An improved pressure vessel [capable of withstanding elevated hydrostatic pressures, and elevated temperature] comprises a tubular [cylindrical] casing [capable of withstanding extreme hydrostatic pressures] having an internal cavity and a first and second opening at each end [permitting access to said internal cavity]. The internal cavity is divided into a first and second cylindrical plug region extending inward from the first and second opening and a hollow interior region. An optical component [is] in the hollow interior has [having] at least a plurality of optical fiber pigtails extending therefrom [from said optical component]. A first and second cylindrical plug is force fit into the [first and second] plug regions. At least one plug has a through-hole for receiving [and passing at least some of the] optical fiber pigtails [to a position outside of the pressure vessel]. At least one plug has a ceramic adhesive plug formed [in a necked-down through-hole] by inserting adhesive into the through-hole and preferably filing [substantially all of] the void space [within the through-hole not occupied by the optical fiber pigtails] therein. The adhesive [is allowed to encapsulate] encapsulates the [leads or] optical fibers passing through the through-hole [to seal the opening]. The plug has a

channel machined into its outer circumference to receive an O-ring[, the O-ring providing an additional seal between the plug and the tubular casing]. A cap [is formed to cover] covers over and beyond the outer surface of the plug [using a polymer adhesive.]

IN THE CLAIMS:

Claims 1-2 and 5-8 have been canceled without prejudice or disclaimer. Claims 3-4 and 9-10 have been amended as follows:

1 3. (amended) [The pressure vessel of claim 1 wherein the] An improved pressure
2 vessel comprising:
3 a tubular casing having an internal cavity and an opening in at least one end
4 permitting access to said internal cavity;
5 a plug region [is circular is circular in cross section, at least a portion of said plug
6 region] adjacent said opening with a plug therein, the plug and plug region having a cross
7 section diminishing in diameter with distance from [said] the opening; and,
8 a component in said hollow interior having at least a first lead passing through
9 said plug to exit the pressure vessel, said plug encapsulating said component lead and
10 sealing said opening.

1 4. (amended) An improved pressure vessel comprising:
2 a tubular casing having an [The pressure vessel of Claim 2 wherein the] internal
3 cavity [has] with a circular cross section and an opening in at least one end permitting
4 access to said internal cavity;
5 a plug region adjacent said opening with a plug therein, the plug region being
6 necked down to match the internal cavity [circular] cross section; and,
7 a component in said hollow interior having at least a first lead passing through
8 said plug to exit the pressure vessel, said plug encapsulating said component lead and
9 sealing said opening.

1 9. (amended) The pressure vessel of Claim [1] 3 wherein the plug is formed from
2 a ceramic adhesive.

1 10. (amended) The pressure vessel of Claim [1] 3 wherein the plug is formed from
2 a ceramic adhesive, said plug having an external surface, and wherein said pressure
3 vessel further comprises:
4 a cap, said cap being formed from a polymer material to cover and extend beyond
5 the external surface of said plug thereby forming a fluid barrier over the surface of the
6 plug.

No new claims are added by this amendment.